

## **REMARKS**

In support of our arguments, here following, we attach an Affidavit from Mark Appleton Hildesley who is one skilled in the art. That he is one skilled in the art is confirmed by the experience and qualifications, both in the U.S. and internationally, disclosed in points 2 and 3 of his Affidavit. We shall refer to Mark Appleton Hildesley's Affidavit as the Affidavit for conciseness.

### **The 35 U.S.C. § 103 Rejection of Claims**

Claims 1-17, 19, 21 and 22 have been rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Brown (US 5,480,330) in view of Blanchard (US 6,273,768) and Austin (US 3,601,989).

The Examiner has indicated that as the terms "low pressure high mass" and "high pressure low mass" have not been defined and thus do not carry patentable weight. With due respect to the Examiner the terms were understood by those skilled in the art at the time the present application was filed; thus no definitions appeared necessary. In support of this, we refer the Examiner to point 21 of the Affidavit, where it states "The acceptance of high mass - low pressure and low mass high pressure distinctions as understandable terms to a practitioner skilled in the art on July 13th, 2004 and the adoption of geometry to accommodate the former description's working requirements being novel in 2004 are both reasonable positions to take. The distinction between the two conditions of operation may not be obvious to one not skilled in the art..".

The Examiner goes on to indicate that as no pressure or mass ranges are defined that he is free to interpret the systems as "capable of functioning at any given water

pressure". We direct the examiner to point 10 of the Affidavit where one skilled in the art indicates that "...it is not reasonable to interpret that in the absence of specific water pressure and mass limitations the devices described in the prior art can function at any given water pressure.". Given one skilled in the art has a diametrically opposed view to the Examiner we ask the Examiner to provide supporting evidence for his position, or accept that it is not sustainable.

The invention as claimed in the application is a low pressure high mass device, and based on the Affidavit from one skilled in the art this term was understood at the time and would need no range of pressure and flows defined for them to clearly understand what was meant. In point 10 of the Affidavit one skilled in the art additionally states "the applicant design can best be summarized as low pressure high mass". So the term low pressure high mass best describes the present invention and no additional descriptors would be needed for one skilled in the art to understand what was meant.

Brown (U.S. 5,480,330) describes a high pressure low mass device, see the Affidavit at points 17 where it states "This is what one practiced in the art would expect for a high pressure low mass style of layout". A high pressure low mass device cannot operate the same way as a low pressure high mass device, the geometry prevents this. See the Affidavit points 6, 8, 11, 12 and 19 that confirm this interpretation. We direct the Examiner to the following passage in point 6 of the Affidavit "the devices described in Austin, Blanchard and Brown all describe mechanical geometry designed to increase pressure and velocity of flow out of the channel of the pumps, upon exiting the device. This type of design was known at the time of invention and if a designer was asked if these three patents described high pressure - low mass of water passing through these designs, they would say yes. If the same practitioner were asked if the same devices

could be run to produce a low pressure - high mass output, the answer would be no.” Given one skilled in the art indicates that none of the cited prior art documents would be seen as describing low pressure high mass device, and that the terms high pressure low mass and low pressure high mass were understood at the time of the present application, it is difficult to see how Blanchard, Brown or Austin teach towards the present invention. We reiterate the comment made in our previous response “Any outlet that includes a nozzle will tend to make the propulsion unit act as high pressure low mass unit.” This teaches away from the present invention.

Brown discloses a nozzle, and there is no teaching that this nozzle can be dispensed with. As confirmed by one skilled in the art (see point 11) the prior art nozzle is required “to increase pressure on the mass of water that needs to move through the jet in order to create a useful pressure difference”. The present invention requires an outlet that “presents minimal impedance to the flow of water therethrough”, clearly the prior art teaches away from this. One skilled in the art comments (point 11) that “a decrease in outer diameter of the nozzle will decrease the ability of the applicant invention to transfer mass through the jet and thus the prior art concept would reduce the performance”; with due respect to the Examiner why would the application incorporate a feature that would reduce the performance? Brown requires a feature that would reduce the performance of the present invention, so it teaches away from the present invention. There is no suggestion in Brown that it could operate without a nozzle that increases the pressure. This is reiterated by one skilled in the art at point 12 of the Affidavit which says “it will be obvious to one skilled in the art that the shape and size of the end of the nozzle on the prior art designs all decrease in their radial size (taper) to concentrate the flow of the liquid through them and increase the pressure change in the nozzle”. A nozzle configured to increase the pressure cannot, we believe, be said to offer minimal impedance.

Brown discloses a device that has a fixed bevel gear driving the impellers, this teaches away from driving each of the impellers at differing speeds. There is no suggestion that an alternative could be used, certainly no teaching towards driving each impeller at a different speed. With due respect to the Examiner, we can find no reference to driving each of the impellers with a different engine. With no mention of each impeller being driven by a separate engine the only disclosed method of driving the impellers in opposing directions in a bevel gear. The bevel gears as described and shown only allow the impellers to rotate at the same speed (see Col. 3 lines 49-57). Given rotating each impeller at differing speeds is not disclosed, Brown would not seem to fairly suggest that one impeller imparts less energy than the other. The only reference to energy in Brown in Col. 4 line 1 "but energy is added thereto by the rearward..". It should be noted that even if there was a suggestion that each of the impellers could rotate at different speed to the other it would not result in a device similar to the present invention, which is a low pressure high mass device.

With due respect to the Examiner, to one skilled in the art, Brown does not disclose a device similar to the present invention. In fact the geometry of Brown teaches a high pressure low mass device and not a low pressure high mass device, which is the object of the present application. One skilled in the art would not see the present invention as obvious in the light of Brown, taken either alone or in combination with any other document. This view is supported in point 6 and point 8, among others, of the Affidavit.

Blanchard (U.S. 6,273,768) describes a device that to one skilled in the art would be seen as a "high pressure low mass set up" (the Affidavit at point 18); thus, though able to be combined with Brown it does not fairly suggest the present invention. One

skilled in the art comments in point 7 of the Affidavit that at the time the present application was filed "Common practice....would not have been to create a housing where the output taper was not decreasing the final diameter of the output flow". Thus any suggestion that the removable nozzle was simply a tube would not have been an obvious modification (at the time Blanchard was filed it would be even less likely). One skilled in the art goes on to say that even if this were the case that "it would still not match the effect of the applicant's design as the housing is already decreasing in diameter.." Blanchard teaches away from the present invention in that it requires a nozzle, one skilled in the art would interpret Brown and Blanchard as relating to high pressure low mass devices, whereas the present application is directed to a low pressure high mass device which requires a low impedance outlet. See points 6, 8, 11, 12 and 19 that confirm the difference between the present application and the prior art cited. One skilled in the art would not have seen the present invention as obvious in light of Blanchard alone or combined with any other document cited.

Austin (U.S. 3,601,989) to one skilled in the art "This is not a high mass low pressure style of layout" (see the Affidavit point 16). One skilled in the art sees Austin as a high pressure low mass design (see point 15 in the Affidavit). Austin further discloses a device with a single or multistage device; neither Brown nor Blanchard could operate as a single stage device as one impeller cannot eliminate its own swirl. Please see the arguments filed earlier on this point, we do not believe that one skilled in the art would have combined the teachings of Brown and/or Blanchard with Austin. Austin can operate with a single impeller driven by one of two engines, Brown and Blanchard could not operate as described, without a second impeller they would not eliminate swirl without stators. See points 6, 8, 11, 12 and 19 that confirm the difference between the present application and the prior art cited. One skilled in the art would not

have seen the present invention as obvious in light of Austin alone or in combination with any or all of the other cited documents.

We draw the Examiner's attention to the comments made by one skilled in the art in points 5, 6, 8-12, and 19-21 of the Affidavit which confirm that the present invention could not be considered obvious in the light of Brown, Blanchard and Austin alone or in any combination with the others. All of the cited documents relate to high pressure low mass devices which operate fundamentally differently to the present device which is a low pressure high mass device. The nozzle present in all of the prior art cited point away from the present inventions requirement that "the cross sectional area of the outlet is such that in use it presents minimal impedance to the flow of water therethrough", this prevents the present invention from operating as a high pressure low mass device.

We reiterate our earlier remarks made in the response filed on January 10, 2008 regarding Brown, Blanchard and Austin which we respectfully request the Examiner reconsider in light of the Affidavit from one ordinarily skilled in the art.

One skilled in the art would see the plug 18 shown in the drawings as confirming the low pressure high mass operation of the present invention as it seeks to maintain maximum mass flowrate (see points 13 and 14 in the Affidavit). Point 14 describes the operation of the prior art and present applicants designs thus: "Applicant design increases mass flow while prior art design increases pressure".

In summary, Applicant respectfully submits that:

- a. Brown, Blanchard and Austin in combination or alone discloses high pressure low mass devices;

- b. The terms low mass high pressure and high mass low pressure were understood at the time the application was filed and as such no specific ranges are required for those of ordinary skill in the art;
- c. An outlet in direct communication with the downstream impeller that offers minimal impedance to the flow of water therethrough prevents the present invention from operating as a high pressure low mass device;
- d. Brown, Blanchard and Austin all include a nozzle to increase the pressure, a nozzle cannot be said to offer “minimal impedance”;
- e. The prior art does not mention the term high pressure low mass device as to one skilled in the art it is clear they operate this way. To operate the prior art devices as low pressure high mass devices, if this was even possible, would decrease their performance, and all of the prior art cited aims to improve performance; and
- f. One skilled in the art does not see the present invention as obvious in light of Brown, Blanchard and Austin (alone or in any combination) as they operate in a fundamentally different way. The prior art devices are configured to increase the pressure whereas the present invention is configured to increase the mass flow.

**ALLOWABLE SUBJECT MATTER**

The Examiner states as follows: "Claims 18 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims."

It is respectfully submitted that base Claim 1 is allowable over the cited art for the reasons as stated above. Accordingly, it is requested that the requirement that claims 18 and 20 be rewritten in independent form be withdrawn.

Favorable reconsideration and passage to allowance are respectfully solicited.

It is believed that no further fees or deficiencies in fees are owed. However, authorization is hereby given to charge our Deposit Account No. 13-0235 in the event any fees are owed.

Respectfully submitted,

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